

## CLAIMS

What is claimed is :

1. A thermoplastic resin composition comprising

(A) a base composition comprising (1) 5-45 % by weight of a polypropylene; (2) 5-80 % by weight of an olefin-based copolymer rubber; (3) 5-30 % by weight of a processing oil; (4) 1-30 % by weight of a low density polyethylene resin, high density polyethylene resin or a mixture thereof;

(B) 0.02-5 parts by weight of an organic peroxide crosslinking agent on the basis of 100 parts by weight of the base composition (A);

(C) 0.1-5 parts by weight of a crosslinking aid on the basis of 100 parts by weight of (A) the base composition (A); and

(D) 0.5-5 parts by weight of a polytetrafluoroethylene on the basis of 100 parts by weight of (A) the base composition (A).

2. The thermoplastic resin composition according to claim 1, wherein (1) said polypropylene is an atactic polymer prepared as a block copolymer or random copolymer of propylene and  $\alpha$ -olefin monomer and a crystalline polymer having a melt index (230 °C, 2160 g) of 0.1-60 g/10min.

3. The thermoplastic resin composition according to claim 1, wherein (1) said polypropylene is an organic peroxide prepared by extruder having a melt index (230 °C, 2160 g) of 130-160 g/10min.

4. The thermoplastic resin composition according to claim 1, wherein (2) said olefin-base copolymer rubber is selected from the group consisting of ethylene-propylene-diene terpolymer, ethylene-propylene copolymer rubber, ethylene-butene copolymer rubber, ethylene-octene copolymer rubber, and styrene-

ethylene-butylene-styrene copolymers (SEBS).

5. The thermoplastic resin composition according to claim 1, wherein (3) said processing oil is paraffin-type mineral oil having an ignition temperature of  
5 from 300 to 580 °C.

6. The thermoplastic resin composition according to claim 1, wherein (4) said low density polyethylene resin is a copolymer of ethylene and  $\alpha$ -olefin monomer and has a melt index (190 °C, 2160 g) of 10 g/10min or less.

10 7. The thermoplastic resin composition according to claim 1, wherein (d) said high density polyethylene resin is a copolymer of ethylene and  $\alpha$ -olefin monomer and has a melt index (190 °C, 2160 g) of 5 g/10min or less.

15 8. The thermoplastic resin composition according to claim 6, wherein said  $\alpha$ -olefin monomer is selected from the group consisting of 1-butene, 1-pentene, and 1-hexene.

20 9. The thermoplastic resin composition according to claim 7, wherein said  $\alpha$ -olefin monomer is selected from the group consisting of 1-butene, 1-pentene, and 1-hexene.

25 10. The thermoplastic resin composition according to claim 1, wherein (B) organic peroxide crosslinking agent is selected from the group consisting of benzoyl peroxide, lauryl peroxide, dicumyl peroxide, 1,3-bis(*t*-butylperoxyisopropyl)benzene, di(*t*-butyl) peroxide, 2,5-dimethyl-2,5-di(*t*-butylperoxy)hexane, 2,5-dimethyl-2,5-di(*t*-butylperoxy)hexane-3, *n*-chlorobenzoyl peroxide, *n*-butyl-4,4-bis(*t*-butylperoxy) ballirate, 2,4-dichlorobenzoyl peroxide.

11. The thermoplastic resin composition according to claim 1, wherein (C) said crosslinking aid is selected from the group consisting of divinylbenzene, ethylene glycol dimethacrylate, triallyl cyanurate, diethylene glycol dimethacrylate, allyl methacrylate, and trimethylolpropane trimethacrylate.

12. A thermoplastic resin composition comprising:

(B) a base composition comprising (1) 15% to 30% by weight of a polypropylene; (2) 40 to 60% by weight of an olefin-based copolymer rubber; (3) 10% to 20% by weight of a processing oil; and (4) 5% to 20% by weight of a low density polyethylene resin, high density polyethylene resin or a mixture thereof;

(E) 1 part to 5 parts by weight of an organic peroxide crosslinking agent on the basis of 100 parts by weight of the base composition (A);

(F) 0.1-5 parts by weight of a crosslinking aid on the basis of 100 parts by weight of (A) the base composition (A); and

(G) 0.5-5 parts by weight of a fluoridated polyolefin resin on the basis of 100 parts by weight of (A) the base composition (A).

13. The thermoplastic resin composition according to claim 12, wherein the polypropylene is a crystalline atactic polymer prepared as a block copolymer or random copolymer of propylene and  $\alpha$ -olefin monomer and having a melt index (230 °C, 2160 g) of 0.1-60 g/10min; the olefin-base copolymer rubber is selected from the group consisting of ethylene-propylene-diene terpolymer, ethylene-propylene copolymer rubber, ethylene-butene copolymer rubber, ethylene-octene copolymer rubber, and styrene-ethylene-butylene-styrene copolymers; and the low density polyethylene resin is a copolymer of ethylene and  $\alpha$ -olefin monomer and has a melt index (190 °C, 2160 g) of 10 g/10min or less.

14. The thermoplastic resin composition according to claim 12, wherein the polypropylene comprises an organic peroxide prepared by extruder and having a melt index (230 °C, 2160 g) of 130-160 g/10min.

15. The thermoplastic resin composition according to claim 12, wherein (2) said olefin-base copolymer rubber is selected from the group consisting of ethylene-propylene-diene terpolymer, ethylene-propylene copolymer rubber, ethylene-butene copolymer rubber, ethylene-octene copolymer rubber, and styrene-ethylene-butylene-styrene copolymers (SEBS).

16. The thermoplastic resin composition according to claim 12, wherein the polypropylene is a crystalline atactic polymer prepared as a block copolymer or random copolymer of propylene and  $\alpha$ -olefin monomer and having a melt index (230 °C, 2160 g) of 0.1-60 g/10min; and the olefin-base copolymer rubber comprises dicyclopentadiene, 1,4-hexadiene, methylene norbornene, ethylidene norbornene, cyclohexadiene, or derivatives thereof in an amount sufficient to provide unsaturated function to the rubber.

17. The thermoplastic resin composition according to claim 12, wherein the processing oil is paraffin-type mineral oil having an ignition temperature of from 300 to 580 °C, and the fluoridated polyolefin resin is a fluoridated polyethylene resin.

18. The thermoplastic resin composition according to claim 12, wherein the low density polyethylene resin is a copolymer of ethylene and  $\alpha$ -olefin monomer and has a melt index (190 °C, 2160 g) of 10 g/10min or less, the high density polyethylene resin is a copolymer of ethylene and  $\alpha$ -olefin monomer and has a

melt index (190 °C, 2160 g) of 5 g/10min or less, or both, and the  $\alpha$ -olefin monomer is independently selected from the group consisting of 1-butene, 1-pentene, and 1-hexene.

5 19. The thermoplastic resin composition according to claim 1, wherein (B) organic peroxide crosslinking agent is selected from the group consisting of benzoyl peroxide, lauryl peroxide, dicumyl peroxide, 1,3-bis(*t*-butylperoxyisopropyl)benzene, di(*t*-butyl) peroxide, 2,5-dimethyl-2,5-di(*t*-butylperoxy)hexane, 2,5-dimethyl-2,5-di(*t*-butylperoxy)hexane-3, *n*-  
10 chlorobenzoyl peroxide, *n*-butyl-4,4-bis(*t*-butylperoxy) ballirate, 2,4-dichlorobenzoyl peroxide.

15 20. The thermoplastic resin composition according to claim 12, wherein the crosslinking aid is selected from the group consisting of divinylbenzene, ethylene glycol dimethacrylate, triallyl cyanurate, diethylene glycol dimethacrylate, allyl methacrylate, and trimethylolpropane trimethacrylate.

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